

Three types of wireless technology

BLUETOOTH

WI-FI

INFRARED



- * Bluetooth is a proprietary open wireless technology standard for exchanging data over short distances (using short wavelength radio transmissions) from fixed and mobile devices, creating personal area networks (PANs) with high levels of security
- * it was originally conceived as a wireless alternative to RS-232 data cable



BluetoothTM

- * Bluetooth is a high-speed, low-power microwave wireless link technology, designed to connect phones, laptops, PDAs and other portable equipment together with little or no work by the user
- * Bluetooth is the name for a short-range radio frequency (RF) technology that operates at 2.4 GHz and is capable of transmitting voice and data



BluetoothTM

- * It is also known as the IEEE 802.15 standards.
- * Bluetooth is more suited for connecting two point-to-point devices, whereas Wi-Fi is an IEEE standard intended for networking
- * Operates at 2.4 GHz and is capable of transmitting voice and data. The effective range of Bluetooth devices is 32 feet (10 meters). Bluetooth transfers data at the rate of 1 Mbps



- * Wifi (also WiFi, Wi-fi or wifi), is a brand originally licensed by the Wi-Fi Alliance to describe the underlying technology of wireless local area networks (WLAN) based on the IEEE 802.11 specifications.
- * Wi-Fi was intended to be used for mobile computing devices, such as laptops, in LANs, but is now often used for increasingly more applications, including Internet and VoIP phone access, gaming, and basic connectivity of consumer electronics such as televisions and DVD player



- * The typical Wi-Fi setup contains one or more Access Points (APs) and one or more clients. An AP broadcasts its SSID (Service Set Identifier, "Network name") via packets that are called beacons, which are broadcast every 100 ms. The beacons are transmitted at 1 Mbit/s, and are of relatively short duration and therefore do not have a significant influence on performance. Since 1 Mbit/s is the lowest rate of Wi-Fi it assures that the client who receives the beacon can communicate at least 1 Mbit/s.



- * **Advantages of Wi-Fi**

- * **Allows LANs to be deployed without cabling, typically reducing the costs of network deployment and expansion**
- * **Wi-Fi silicon pricing continues to come down, making Wi-Fi a very economical networking option and driving inclusion of Wi-Fi in an ever-widening array of devices**



Infrared

- * A technology that uses infrared radiation for wireless transmission between computer devices, as well as many handheld remotes for TVs and video and stereo equipment
- * Computer infrared network adapters both transmit and receive data through ports on the rear or side of a device. Infrared adapters are installed in many laptops and handheld personal devices. In Microsoft Windows, infrared connections can be created through the same method as other local area network

IR Advantages:

- * **Low power requirements:** therefore ideal for laptops, telephones, personal digital assistants
- * **Low circuitry costs:** \$2-\$5 for the entire coding/decoding circuitry
- * **Simple circuitry:** no special or proprietary hardware is required, can be incorporated into the integrated circuit of a product
- * **Higher security:** directionality of the beam helps ensure that data isn't leaked or spilled to nearby devices as it's transmitted
- * **Portable**
- * **Few international regulatory constraints:** IrDA (Infrared Data Association) functional devices will ideally be usable by international travelers, no matter where they may be
- * **High noise immunity:** not as likely to have interference from signals from other devices

IR Disadvantages

- * **Line of sight:** transmitters and receivers must be almost directly aligned (i.e. able to see each other) to communicate
- * **Blocked by common materials:** people, walls, plants, etc. can block transmission
- * **Short range:** performance drops off with longer distances
- * **Light, weather sensitive:** direct sunlight, rain, fog, dust, pollution can affect transmission
- * **Speed:** data rate transmission is lower than typical wired transmission